

measure, can be connected by continual chains of triangles; and the meridian line of France already prolonged northward to the Shetland Islands, carried out in Spain by the officers of that country, will reach the African Continent and extend to the Sahara, with a length of  $30^{\circ}$ .

France will then be able to oppose to the Russian arc and to the one measured in Central Europe the French arc, which, passing over plains and very high mountains, will cross the North Sea and the Mediterranean.

There is thus considerable truth in the words of M. Faye:—"Let us not forget that the French, who are at the present time so often reproached with their geographical ignorance, are the real creators of continental or maritime geodesy, and that they have continually, since Cassini to our days, published admirable geodetic papers, which have served as models to our rivals; the truly learned men abroad have always acknowledged their value."

The map of Algeria will be constructed on the same plan as the map of France, to the scale of  $\frac{1}{1,000,000}$ , but as it will be coloured, and as level curves will be substituted for hatchings, it will have considerable advantages over the latter.

M. CORNU

### NOTES

THE French *Société d'encouragement* have awarded to Sir Charles Wheatstone, F.R.S., the Ampère medal for his remarkable works in theoretic and applied physics. The grand prize of 12,000 francs for the discovery most useful to French industry has been awarded to M. Pasteur, for the improvements he has introduced into the manufacture of silk, of wines, of vinegar, and of beer. A prize of 3,000 francs has been awarded to M. Gramme for the construction of an apparatus giving an electric current constant in direction and in intensity, whose electromotive force and conductivity are equal to those of an azotic acid pile of 60 or 80 elements of ordinary size, and superior both in economy and solubility to the apparatus which are at present in use.

AT the present time there are staying in England two illustrious physiologists, Prof. Kolliker and Prof. Fick, the former the renowned head of the Histological School, and the latter of the Physiological Institute in the University of Wuzburg.

THE University of Cambridge has accepted a fund raised by several members of St. John's College for the purpose of founding a prize to be called the Adams Prize, for the best essay on some subject of pure mathematics, astronomy, or other branch of natural philosophy. The prize is to be given once in two years, and to be open to the competition of all persons who have at any time been admitted to a degree in the University. The examiners have given notice that the subject for the prize to be adjudged in 1875 is a Theory of the Reflection and Refraction of Light.

BY the present monthly mail a testimonial, consisting of a silver tea and coffee service, is being sent to Dr. Kirk at Zanzibar, by the Royal Geographical Society. The inscription states that it is given in recognition of the services Dr. Kirk has rendered to his country and to science by his generosity, intelligence, and zeal in the advancement of African discovery.

MR. A. H. GARROD, B.A., has been appointed Lecturer on Zoology and Comparative Anatomy at the Charing Cross Hospital. Mr. Garrod, we believe, intends to give a course of lectures during the summer.

AT the general monthly meeting of the Royal Institution of Great Britain, on Monday, April 7, the special thanks of the members were returned to Dr. Warren De La Rue, for his donation of 100*l.* towards the expense of fitting up the new Laboratories.

THE Report to the Board of Visitors of the Astronomer Royal for Scotland, gives a satisfactory account of the work, astronomical and meteorological, done at the Royal Observatory, Edinburgh. The alterations in the observatory have been completed, and the new equatorial, referred to in NATURE some months ago, is nearly ready for use, though we are sorry to see that its efficient working is very likely to be marred from want of funds. Though much needed for various purposes, Government (with a surplus of nearly five millions!) have absolutely refused to grant any additional aid to the Edinburgh Observatory. Prof. Piazzi Smyth compares his position to that of an "unfortunate artillery officer who should have received a big gun, of perhaps the most approved wrought iron and steel construction in itself, but without means of moving it, without powder and shot; and yet should be expected by the public to be continually firing it with immense success and at all sorts of objects throughout the whole year."

WITH reference to the sum of 500*l.* placed at the disposal of the Council of the Society of Arts, through Sir William Bodkin, by a gentleman who does not wish his name to appear, for promoting, by means of prizes or otherwise, economy in the use of coal for domestic purposes, the Council have decided to offer the following prizes:—1. For a new and improved system of grate, suitable to existing chimneys as generally constructed, which shall, with the least amount of coal, answer best for warming and ventilating a room.—The Society's Gold Medal and Fifty Pounds. 2. For a new and improved system of grate, suitable to existing chimneys as generally constructed, which shall, with the least amount of coal, best answer for cooking food, combined with warming and ventilating the room.—The Society's Gold Medal and Fifty Pounds. 3. For the best new and improved system of apparatus which shall, by means of gas, most efficiently and economically warm and ventilate a room.—The Society's Gold Medal and Fifty Pounds. 4. For the best new and improved system of apparatus which shall, by means of gas, be best adapted for cooking, combined with warming and ventilating the room.—The Society's Gold Medal and Fifty Pounds. 5. For any new and improved system or arrangement not included in the foregoing, which shall efficiently and economically meet domestic requirements.—The Society's Gold Medal and Fifty Pounds.

WE understand that the scientific authorities at Berlin are preparing a manual containing the necessary information for the requirements of the various expeditions sent out by the Imperial Government to observe the transit of Venus. The information given will by no means be confined to astronomical and physical subjects, but will incorporate all the branches of natural history. We hope our Government will follow so excellent a precedent, and associate a certain number of naturalists along with the astronomical observers, especially in situations where their observations are likely to prove of value.

THE forty tanks in the Brighton Aquarium, under Mr. Savile Kent's superintendence, are now well stocked with fishes, and present a most interesting field of study to the Ichthyologist. Eight of them are devoted to fresh-water fishes, and the remaining to the marine forms. Amongst the latter are fine specimens of the herring, lump-sucker, grey, streaked and red gurnets, sting-ray, balan wrasse, cook and cork-wing wrasses, and gold-sinny. Two species of dogfish have deposited eggs in their tanks, and the embryos are in process of development. The most recent addition to the fresh-water fishes is a fine salmon, presented by Mr. Berridge, Chairman of the Usk Fisheries. The two porpoises are in excellent health, and feed well on smelts and small whittings. The large tank, 100 feet in length, and containing 110,000 gallons of sea-water, gives them ample space for their gyrations.

ON Saturday afternoon last Professor Ansted was thrown with so much violence from a low basket phaeton in which he and another gentleman were driving, near Melton, that his thigh was broken, and a severe scalp wound inflicted. After being attended to by a doctor, he was removed to his house at Melton. Hopes of his recovery are entertained.

ON Saturday last Canon Greenwell, of Durham Cathedral, and Professor Rolleston, of Oxford, completed a series of very interesting excavations among the ancient barrows which exist in the Goodmanham and Etton Wolds, near Beverley, Yorkshire. There is a singular absence in these barrows of the implements so frequently found with ancient human remains in many parts of the country. Not only in the present excavations, but in those formerly instituted by Lord Londesborough, implements usually associated with ancient interments are entirely wanting. Contrary also to the generality of the barrows found on the wolds, which contain chiefly unburnt remains, in this locality they are for the most part burnt. Although this part of the country seems to have been extensively peopled, as these sepulchral remains betoken, there is a singular absence of implements, whereas in the north and middle wolds flint implements are found scattered about in all directions. Stone axes and other rude implements are abundant in the rest of the wold district, but they seem to have been entirely unknown in this locality, as many persons have searched for such remains without result.

THE Geographical Society of St. Petersburg has lately undertaken a new exploration of Russian territory in addition to those already carried on under its auspices. The plan consists in a minute exploration, under the leadership of M. Tschekanowsky, of the area between the lower affluents of the Yenisei and the Lena, embracing the basin of the river Olenek, which represents an important deficiency in the known portion of Eastern Siberia. Two years will be occupied in the exploration. During the first the expedition will descend the Lower Tunguska, and will reach Irkutsk by the Yenisei. During the second year it expects to reach the sources of the Olenek by sledges, to descend that river to its mouth, and then cross over to the Lena, and return by this river to Irkutsk.

THOSE who are interested in the mental advancement of women, should refer to the March number of the *American Naturalist*, in which they will find that the first article, on "Controlling sex in butterflies," is written by Mrs. Mary Treat. This lady has prosecuted her inquiries in a truly scientific spirit, and she records her results with the greatest precision and accuracy. An outline of her argument will be found in our notice of the periodical in which it appears.

DR. BROWN-SEQUARD has started a new journal, the *Archives of Scientific and Practical Medicine*, published at New York and London on the 15th of each month. His sub-editor is Dr. E. C. Seguin. This periodical will chiefly contain original papers on subjects belonging to every branch of the medical sciences. It will also comprise *résumés* of English and foreign papers, reports from the author's laboratory, and reviews of modern works on kindred subjects. The first number for January, which is beautifully printed, contains 100 pages, with one plate. In it Dr. Brown-Sequard contributes a paper on "Effects of Injuries of Nerves," and there are others by Dr. Seguin, Mr. Dupuy, Dr. Sands, Dr. Mary Putnam, and several able medical authors.

PETERMANN'S *Mittheilungen* thus speaks of the refusal of Government to grant an Arctic expedition this year:—"England, with her enormous wealth, her multitude of ships, sailors, and facilities for equipment, but above all with her great experience, could easily have sent out such an expedition, and with more

prospect of success than any other nation; but the English Government, which appears to carry parsimony further than any other, has refused the request, at least for this year. But it is to be hoped that the undertaking, for which Government was also petitioned in 1865, will at last be afloat in 1874."

AT the meeting of the French Academy last week, M. Jamin exhibited a magnet which he had constructed to carry upwards of twenty-two times its own weight: it weighs 2 kilogrammes and carries 45. Hitherto the greatest carrying power attained in artificial magnets has been from four to five times their own weight. M. Jamin has obtained this unprecedented result by substituting for the very thick plates hitherto employed, a sufficient number of very thin plates superposed on each other, and all thoroughly magnetised. One result of this achievement will be that the volume and weight of magneto-electric machines can now be diminished to a very great extent.

A VERY full notion of the rapid material progress of Victoria in almost every direction may be obtained from the Official Catalogue of Exhibits of the Victoria Exhibition, opened at Melbourne in Nov., 1872. The entries number 1,682, and though there are very few connected directly with science, it would be unjust to form from this fact a low estimate of the progress made in scientific discovery by the colony; an investigation of the entries in the various departments shows that the principles of science have been abundantly taken advantage of in them all. It is gratifying to find, from the patent statistics, that every year shows an increase in the number of inventions connected with agriculture and manufactures, while the mining resources of the country continue to occupy a large share of the attention of inventors. The compiler of the catalogue claims with justice that Victoria has contributed a considerable amount of valuable data to various departments of science. Appended to the catalogue is an interesting essay on "Mining and Mineral Statistics, with Notes on the Rock Formations of Victoria," by Mr. R. Brough Smyth, F.G.S., Secretary for Mines for Victoria. A preliminary note gives some satisfactory statistics as to the progress of the Industrial and Technological Museum of Melbourne, which was opened in September 1870.

THE *Australian Mechanic*, in an article on "Science in the South," thinks "there is good reason for hoping that the time is rapidly advancing when even in Australia the enthusiasm of science will become a wide-spread sentiment, and when a deep and genuine interest will be taken in questions of a purely abstract kind." The *Mechanic* thinks it possible that ere long the Australians "may have the satisfaction of hearing a Tyndall, a Huxley, an Owen, and their worthy fellow-labourers expounding to delighted audiences in the Melbourne Athenæum, 'the fairy tales of science.'"

THE first number of *Cosmos*, the new Italian geographical journal, is handsome and well printed, and the contents creditable. There is a long article on recent expeditions to New Guinea, illustrated by a well-constructed map; and, of course, another long article on African exploration, also accompanied by a map. Another longish article is the first of a series on the Russian possessions in Central Asia. Altogether the first number of *Cosmos* is satisfactory, and we wish it a long career and a wide circulation.

THE Italian Geographical Society, by a unanimous vote, has conferred upon the Commendatore Negri Christoforo, who has so long and so perseveringly promoted geographical science among his countrymen, the title of perpetual president of the Society.

MESSRS. CHAPMAN AND HALL have sent us an elaborately constructed but perfectly intelligible "Table of British Strata,"

showing their order of superposition and relative thickness. Although the division into systems, series, and formations are very detailed, the size of the chart is such, and the use of colours is so judicious, that there is little danger of it causing perplexity and confusion to the young student; the plan seems to us admirably clear and useful, and the table is in the highest degree creditable to its constructor, Mr. H. W. Bristow, F.R.S., F.G.S., director of the Geological Survey of England and Wales. It is intended for the use of schools, but we are sure it will be welcomed by many geological students who have long left school.

M. FELIX PLATEAU describes in *Les Mondes*, an ingenious process, of his own invention, for drawing on paper white lines on a black ground—a method so frequently used for scientific illustrations—by means of which both author and artist will be able to judge of the effect of such an illustration before putting it into the hands of the engraver. A piece of thickish paper, as smooth as possible, a little larger than the intended illustration, is heated, say by laying it, with proper precautions against being injured, on the top of a stove, and a piece of bees-wax is rubbed over it until the paper is completely covered with a thin coating. A piece of glass, the size of the paper, is blackened by being held over a candle, and when thoroughly cooled it is laid on the waxed paper and rubbed firmly with the fingers, the result being that a blackened surface is produced on the paper, on which any design can be traced with a needle for the finer lines, or the back of a steel-pen for the thicker ones.

A GREAT international horticultural exhibition is to be held at the Alexandra Palace on May 24 and five following days, on the occasion of the palace being opened to the public.

GENERAL COMSTOCK'S "Annual Report of the Survey of the North and North-Western Lakes" of America for the year ending June 1872, contains the results of much well-planned and thoroughly well-performed work. A well-constructed map illustrates the many topographical and hydrographical data. One point we may mention is that General Comstock has come to the conclusion, as the results of several years' observations, that the moon and sun undoubtedly cause tides in Lake Michigan, though the rise of level is very small indeed; the combination of the two at syzgies giving a tide somewhat less than 0.12 of a foot.

DR. B. W. RICHARDSON, F.R.S., has been elected by the President and Council of the Royal Society, Croonian Lecturer on the subject of muscular motion.

AMONG the Candidates for the professorship of Anatomy to the Royal Academy are Dr. B. W. Richardson, F.R.S., and Mr. John Marshall, F.R.S.

THE Academy understands that Mr. Moggridge, author of "Harvesting Ants and Trap-door Spiders," recently reviewed in NATURE, has deposited specimens of the animals and their nests in the British Museum, and that they are exhibited in one of the public galleries.

THE additions to the Zoological Society's Gardens during the last week include a black Cuckoo (*Endynamis sp?*) from Madagascar, and a Seychellean Sturnother (Sturnothera *subniger*) from the Seychelles, presented by Commissioner H. C. St. John; four Spanish Terrapins (*Clemmys leprosa*), and six Greek land-tortoises (*Testudo græca*) from Morocco, presented by Sir J. Drummond Hay, K.C.B.: a Vulpine Squirrel (*Sciurus vulpinus* var *capistratus*) from S. America, presented by Mr. G. Moore; a Barbary Ape (*Macacus inuus*) from N. Africa, deposited by Lord Calthorpe; three Barbary Sheep (*Ovis tragelaphus*) born in the Gardens; a De Filippi's Meadow Starling (*Sturnella defilippi*) from Rio de la Plata, and a Black Kite (*Milvus migrans*), European, purchased; and two variegated Touracons (*Schirorhis africana*) from W. Africa, received in exchange.

### PREHISTORIC CULTURE OF FLAX

DR. OSWALD HEER, the eminent botanist, and one who has devoted so much attention to the structure and history of fossil plants, publishes an article upon flax and its culture among the ancients, especially the prehistoric races of Europe. His memoir may be summarised as follows: First, flax has been cultivated in Egypt for five thousand years, and that it was and is one of the most generally diffused plants of that country. It occupied a similar position in ancient Babylonia, in Palestine, and on the Black Sea. It occurred in Greece during the prehistoric period, and at an early date was carried into Italy, while its cultivation in Spain was probably originated by the Phœnicians and Carthaginians. Second, it is also met with in the oldest Swiss lacustrine villages, while, at the same time, no hemp nor fabrics manufactured from wool are there to be found. This is considered a remarkable fact, since the sheep was one of the oldest domestic animals, and was known during the stone period. The impossibility of shearing the fleece by means of stone or bone implements is supposed to have been the reason why woollen fabrics were not used. It is thought probable that the skin, with its attached wool, was probably made use of for articles of clothing. Third, the lake dwellers probably received flax from Southern Europe, from which section fresh seeds must have been derived from time to time. The variety cultivated was the small, native, narrow-leaved kind from the coast of the Mediterranean, and not at all that now raised in Europe. It must, therefore, have been cultivated also in Southern Europe, although Dr. Heer could not ascertain among what people and at what age this took place. If this could be ascertained it would be an important point in the determination of the antiquity of the lake dwellers. Fourth, at the time of the empire both summer flax and winter flax were cultivated in Italy, as now, but in what form it was grown in ancient Egypt is not determined. It is thought probable that the narrow-leaved variety was first introduced, and after that the Roman, and then the common varieties followed. The common plant has doubtless arisen from the cultivation of the narrow-leaved, while the Roman winter flax and the *Linum ambiguum* constitute the intermediate stages. The original home of the cultivated flax was therefore along the shores of the Mediterranean. The Egyptians had probably cultivated it, and from them its use was doubtless disseminated. It is possible that the wild variety and the winter flax were grown elsewhere at the same time, when the cultivated variety had long since driven them out of use in Egypt.

### SCIENTIFIC SERIALS

IN the *Journal of Botany* for February Dr. Trimen describes one of the most interesting additions recently made to the British flora, *Juncus pygmaeus*, a well-known European species, discovered by Mr. W. H. Beeby in the already very rich locality of Kynance Cove, Cornwall. The article is accompanied by a good drawing. Mr. J. G. Baker gives a description of the little known *Rosa appennina*. In geographical botany Dr. W. M. Hind contributes a list of plants of North Cornwall. Mr. W. Phillips's notes on the blue reaction given by iodine in certain fungi may furnish a useful discrimination of difficult species. In the March number Mr. Worthington Smith gives a description, with coloured plate, of several new Hymenomycetous fungi from stoves; and Mr. J. A. Lees a useful paper on the peculiarities of plant-distribution in the neighbourhood of Leeds. Dr. H. F. Hance has an article on the "Ch'ing Muh Hsiang" or "Green Putchuk" of the Chinese, derived from a species of *Aristolochia*, the paper being illustrated by a copy of a native drawing. In both these numbers are also a variety of selected articles, short notes, and memoranda. We are glad to see this interesting journal taking so increasingly useful a place among our scientific periodicals.

AMONG the numerous articles of interest in the *Scottish Naturalist* for January (commencing the 2nd volume) we may single out especially, "On the occurrence of the hooded seal (*Cystophora cristata*) at St. Andrews," by Mr. R. Walker; a commencement of an article on Scottish gall-making insects, by Mr. P. Cameron, jun., illustrated by a beautiful coloured plate of *Nematus gallicola*; and a paper on the recent remarkable abundance of *Vanessa Antiopa*, the "Camberwell beauty," in this country, by the editor, who sums up strongly in favour of the native rather than the foreign origin of the insects captured in